**SOUTHWEST FISHERIES SCIENCE CENTER**
**SECOND QUARTER REPORT-FY 2002**
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**Submitted by:** John Hunter, Division Director, Fisheries Resources Division

**Title of Accomplishment or Milestone:** Coastal Pelagic Species (CPS) draft statement on multi-stock management of Pacific sardine with alternative life histories.

**Current Status:** Research Completed and on CPS management team agenda.

**Background Information:** The existing Pacific Fishery Management Council rule for managing the Pacific sardine assumes a single stock which varies in productivity as a function of temperature as measured in surface water at the Scripps Institution of Oceanography pier. The harvest guideline includes an exploitation rate that is 15% when the pier temperature is warmer than 17 degrees and 5% when the temperature is cooler than 17 degrees. Evidence is building that these temperature regimes have been modeled in the late 1980s before the recovery of the dominant spawning group in spring off Central California. It is possible that the spring spawners should be managed at 5% harvest rate and the summer spawners should be managed at 15%.

**Purpose of Activity:** To establish the background to specify a new management model for sardine which recognizes the present -day geography and productivity of these two spawning groups rather than treating them as a homogeneous group with productivity varying as a function of temperature.

**Description of Accomplishment and Significant Results:** We have established the environmental bounds for the two spawning groups. Off California, the sardines spawn offshore in spring in temperatures of 14-15 degrees. Off California and Baja California, the sardines spawn near the coast in summer in temperatures of 17-25 degrees. It is plausible that the adult parameters are established by the temperature at egg development so that the warm water fish grow rapidly and mature early, with a life span of 5 years: the cold water spawning sardine grow slowly and mature in two years, with a life span of 15 years.

**Significance of Accomplishment:** This accomplishment should be considered, along with possible genetic or racial identity and migration, for revision of sardine harvest guidelines. Simulations of yield, frequency and duration of fishery closure and other economic and social considerations should be redone to reflect the importance of this fishery. This revision should be accomplished while the sardine population is in its healthy recovering state rather than waiting for adverse climatic consequences of possible erroneous demographic assumptions.

**Problems:** The principle problem is the availability of modeling time to do the intensive simulations necessary to evaluate a new plan for consideration by the CPS committee and recommendation to the Pacific Council.

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